

Department of Land and Natural Resources

Sustainability Hotspot

1

LAKE WILSON

~Island of Oahu~



Lake Wilson, shown in black in the aerial photograph covers approximately 350 acres at maximum pool and is the largest freshwater sport fishery in the State.

As the largest freshwater sport fishery in the State, Lake Wilson has great, unrealized potential. Designated as the Wahiawa Public Fishing Area, DLNR has managed Lake Wilson since 1957 through a cooperative agreement with Castle & Cooke, Inc. The Wahiawa State Freshwater Park is located along the south fork and includes a boat launching ramp and vehicle-trailer parking area. Largemouth bass is one of the most popular fishes sought by anglers at the lake.

The primarily privately-owned Lake Wilson, also known as Wahiawa Reservoir, was constructed in 1905-06 by damming the convergence of the north and south forks of the Kaukonahua Stream for sugarcane irrigation purposes. It is the largest freshwater impoundment in the State with a capacity of over 3 billion gallons, a shoreline roughly 20 miles in length, and a surface area of about 350 acres at maximum pool.

Although Lake Wilson has great potential for enjoyment, the waterway has numerous problems which need to be examined in an integrated manner. These include:

- maintaining a fishery composed of species found in combination nowhere else in the world, with the potential for instability and unexpected interactions between species;
 - a history of large fish kills caused by lack of oxygen in the water;
 - various parasites and diseases in the fish populations;
 - excessive nutrient input from treated sewage discharges and resulting over-productivity in the reservoir. The City and County of Honolulu's Wahiawa Sewage Treatment Plant discharges into the lake causing fish kills and affecting quality of life in the surrounding community. Enriched water may also have impact in Kaiaka Bay and nearby coastal areas;
 - fish population imbalance, including both overpopulation of forage fish species, and over-harvest/fluctuations of game fish populations, including the current low population of largemouth bass;
 - a rapid increase in the appearance and impact of introduced species.
- The fishery requires intensive management to realize its full potential as a public fishing area, while maintaining a pleasant environment for the surrounding urban community.

Department of Land and Natural Resources

Sustainability Hotspot

2

LAKE WILSON

~Island of Oahu~



Top to bottom: Piranha are just one threat to the Lake Wilson fishery, Aquarium fish enthusiasts have introduced top level predators like golden cichlids and red devils into the waterway, DLNR is working with its partners to maintain Lake Wilson and develop recreational facilities for public enjoyment.

The unplanned introduction of alien species by private individuals is the most difficult and serious issue in the reservoir. Although this problem has been checked in recent years by an intensive public education program, the fishery and quality of the area is still suffering from these consequences:

- a new species of tilapia (cichlid), encouraged by the excessive nutrient input from the sewage treatment plant, has replaced the previously dominant tilapia species and has proven to be a source of diseases that led to extensive fish mortalities in the early 1990s;
- other top level predators (golden cichlids, red devils) originating from releases by aquarium enthusiasts have decimated the natural production of young of one of the most popular fishes, largemouth bass, sought by anglers;
- another alien species, water hyacinth, is a reflection of the fertilizing effect of the sewage input.

DLNR'S Sustainability Hotspot Team, comprised of:

Glenn Higashi - Aquatic Resources, Oahu, 587-0112;
William Devick - Aquatic Resources;
David Higa - Water Commission;
Clyde Hosokawa - State Parks;
Steve Lau - Land Division;
William Palmerton - Conservation and Resources Enforcement;
Stephen Thompson - Boating and Ocean Recreation;

is responsible for the management of Lake Wilson as a public freshwater recreation park.

DLNR's Vision for the Future and How to Attain It

Our inability to have a frequent, on-site presence is the principle barrier to efficient management of this resource. Additional staffing would:

- prevent problems which cause fouling of the waterway and irrigation system such as the presence of water hyacinth, dead and dying fish, and litter accumulation creating an open sewer;
- better adapt responses to the extreme fluctuations in water level associated with agricultural use;

Department of Land and Natural Resources

Sustainability Hotspot

3

LAKE WILSON

~Island of Oahu~



Top to bottom: Members of DLNR's Hotspot Team for Lake Wilson discuss division responsibilities and the unrealized potential for the largest freshwater sport fishery in the State, crowds of fishermen are attracted to the lake by largemouth bass, DLNR is concentrating on keeping the waterway clear and navigable, the Wahiawa State Freshwater Park located along the south fork of the lake includes a launching ramp and a vehicle-trailer parking area.

- improve communication with recreational fishers and encourage greater community cooperation in management of the area;
- deflect criticism of inadequate enforcement through a highly visible presence by the Department;
- implement litter removal and other facilities management (including operation of the reservoir's artificial aeration system as required) to create a higher quality recreational experience and a more pleasant environment for the Wahiawa community;
- discourage illegal swimming by children and reduce associated risk of drowning;
- monitor trends such as the status of fish populations and changes in water quality, which is expected to improve once sewage effluent is diverted from the reservoir in accordance with Department of Health orders.

The Wahiawa Public Fishing Area/Freshwater State Park represents an immensely valuable recreational and economic asset that can be multiplied in value, while retaining the original purpose of the reservoir as an irrigation water source for agricultural production. This can be accomplished through application of DLNR's extensive knowledge about the physical and biological systems in the reservoir, unification of fishing and surrounding community interests in achievement of a clean and high quality environment, and integration of these interests with those of the owners, especially including assurance that the dam and facilities remain in a safe condition.

DLNR's Future Plans:

DLNR's vision for the future of Lake Wilson includes:

- establishment of a permanent Lake Keeper (Fishery Technician) position for Lake Wilson and construction of a small office/laboratory;
- revision of existing Hawaii Administrative Rules to establish catch and release fishing for largemouth bass and tucunare (cichlid);
- implementation of a stock enhancement program for the largemouth bass fishery;
- acquisition of a 16-foot boat for inspection/enforcement of fishing rules, preferably through forfeiture of a vessel used for unlawful purposes;

Department of Land and Natural Resources

Sustainability Hotspot

4

LAKE WILSON

~Island of Oahu~



Glenn Higashi, Team Leader for the Lake Wilson Hotspot maximizes use of existing resources and plans for the future development of this resource.

- establishment of a volunteer enforcement officer program specifically for the reservoir;
- development of a community-based management plan for the area that will include active volunteer involvement beyond enforcement;
- possible introduction of low-impact activities such as kayaking;
- expansion of the State Park to incorporate the originally planned camping areas;
- creation of hiking/biking trails along the reservoir shoreline;
- possible land acquisition along the shoreline of the north fork near the basin area to construct a boat launching ramp, restroom facilities, bike and hiking trails, and the possible site of a small office/laboratory, (land acquisition and other improvements except small office/laboratory and bike and hiking trails are not included in the budget);
- establishment of a kiosk at the freshwater park near the boat launching ramp to display the Public Fishing Area map, rules and regulations, species caught, current problems and announcements for Lake Wilson users, fishing tournaments, events, etc. (kiosk design and construction is not included in budget);
- establishment of a community-based steering committee to provide input for interests and problems;
- development of a water-quality monitoring program to ensure better water-quality to impede over-productivity of exotics such as hyacinth and tilapia (not included in budget).

The presence of a Lake Keeper should deter violations in the area, even if the Lake Keeper does not have enforcement authority. Chronic violators would be reported first-hand to enforcement personnel. In addition, observations will also be made of problems and unusual occurrences (e.g., water hyacinth, new exotics-piranha, etc.) and allow a response before minor problems become severe. In the long run, this would be by far the most cost-effective way to manage the resource.

To implement DLNR's vision for the future of this resource will require a budget of \$262,000. Many features of this plan would be implemented with no additional costs other than staff time. 🌿

Department of Land and Natural Resources Sustainability Hotspot

5

LAKE WILSON

~Island of Oahu~



Top: Hotspot Team member William Palmerton of Conservation and Resources Enforcement reviews an area map. Middle: Team member William Devick of Aquatic Resources. Bottom: Team member Clyde Hosokawa of State Parks.



DLNR Hotspot Team members for Lake Wilson (l-r): Thompson, Higa, Higashi, Lau.